

REMARKS

This communication responds to the Office Action mailed on March 21, 2006. Claims 22, 24, 26, 28, 32, 34, and 37 are amended, no claims are canceled, and no claims are added. As a result, claims 20, 22, 24, 26, 28, 32, 34, and 37 are now pending in this Application.

§101 Rejection of the Claims

Claims 22, 24, 26, and 28 were rejected under 35 USC § 101 because the Office asserts that “the applicants have recited steps that do nothing more than manipulate basic mathematical representations, hence the claim is unpatentable.” The Applicant respectfully traverses this rejection under § 101.

As stated by the Office guidelines for examination, “[i]n many instances it is clear within which of the enumerated categories a claimed invention falls. Even if the characterization of the claimed invention is not clear, this is usually not an issue that will preclude making an accurate and correct assessment with respect to the section 101 analysis. The scope of 35 U.S.C. § 101 is the same regardless of the form or category of invention in which a particular claim is drafted. AT&T, 172 F.3d at 1357, 50 USPQ2d at 1451 . See also State Street, 149 F.3d at 1375, 47 USPQ2d at 1602 wherein the Federal Circuit explained

The question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to -- process, machine, manufacture, or composition of matter -- [provided the subject matter falls into at least one category of statutory subject matter] but rather on the essential characteristics of the subject matter, in particular, its practical utility.”

Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility, pg. 15, October 2005.

In addition, it is respectfully noted that “[w]hile abstract ideas, natural phenomena, and laws of nature are not eligible for patenting, methods and products employing abstract ideas, natural phenomena, and laws of nature to perform a real-world function may well be. In

evaluating whether a claim meets the requirements of section 101, the claim must be considered as a whole to determine whether it is for a particular application of an abstract idea, natural phenomenon, or law of nature, rather than for the abstract idea, natural phenomenon, or law of nature itself.” *Id.* at pgs. 17-18. The Applicant’s claimed methods embody applications that operate to modulate or generate the transparency of an image of an object, and as such, clearly comprise a practical application that achieves a useful, concrete, and tangible final result, as defined in the guidelines. *See Id.* at pgs. 20-22. Therefore, claims 22, 24, 26, and 28 constitute patentable subject matter, and the rejection of these claims under 35 U.S.C. § 101 is improper.

§112, First Paragraph, Rejection of the Claims

Claims 22, 24, 26, 28, 32, 34, and 37 were rejected under 35 USC § 112, first paragraph, as failing to comply with the enablement requirement. To support this rejection, the Office asserts that the angle of incidence recited in claim 22 is different than that described in the specification. The Applicant respectfully disagrees.

The Office is invited to consider the following explanation, using the text and FIG. 1 of the Application, as a mechanism for determining the angle of incidence. First, the angle is described in several examples, as follows:

“... in FIG. 1, a top view of cube 105 is shown, and normal vector 110 with respect to viewing surface 120 intersects cube surface 130 at the base of normal vector 135, creating an angle of incidence 140. Similarly, normal vector 150 with respect to viewing surface 120 intersects cube surface 160 at the base of normal vector 165, creating an angle of incidence 170.” Application, pg. 3, lines 13-17.

That is, an angle of incidence may be created at the intersection of a vector normal to a viewing surface and a vector normal to a planar object surface. This is the same as what is claimed in the rejected claims. However, to clarify that the angle of incidence exists between the two vectors, claim 22 has been amended as follows:

22. (Currently Amended) A method comprising:
identifying a first vector normal to a viewing surface and incident at an object having a planar object surface, the first vector creating an angle of incidence at a second vector normal to the planar object surface; and
modulating the transparency of an image of the object as a function of the angle of incidence of the vector at the planar object surface, wherein the function comprises a cosine function.

This amendment to claim 22 has thus been made for reasons of clarity, and not for reasons related to patentability. Claims 24, 26, 28, 32, 34, and 37 have been amended in a similar manner, and for the same reason.

The M.P.E.P. § 2164 *et seq.* notes that the burden is on the Examiner to establish a *prima facie* case to maintain a rejection of non-enablement with respect to the disclosure of a patent application under 35 U.S.C. § 112, first paragraph. Such a case requires:

1. a rational basis as to
 - a. why the disclosure does not teach, or
 - b. why to doubt the objective truth of the statements in the disclosure that purport to teach;
2. the manner and process of making and using the invention;
3. that correspond in scope to the claimed invention;
4. to one of ordinary skill in the pertinent technology;
5. without undue experimentation; and
6. dealing with subject matter that would not already be known to the skilled person as of the filing date of the application.

“The Examiner must provide evidence ... supporting each of these elements for a rejection under the first paragraph of § 112 to be proper.” See *Patent Prosecution, Practice and Procedure Before The United States Patent Office*, Ira H. Donner, pg. 691, 2002.

Since the specification clearly establishes that an angle of incidence may be created at the intersection of a vector normal to a viewing surface and a vector normal to a planar object surface, as claimed, evidence supporting each of the required elements noted above (e.g., that one of ordinary skill would be unable to practice embodiments of the invention without undue

experimentation) has not been presented, and a *prima facie* case to maintain a rejection of non-enablement under § 112, first paragraph, has not been established. Reconsideration and withdrawal of this rejection is respectfully requested.

§112, Second Paragraph, Rejection of the Claims

Claim 32, 34, and 37 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Office asserts, with respect to claim 37, that “it is unclear whether a computer readable medium or method is being claimed.” The Office also asserts, with respect to claims 32 and 34, that “a computer program not yet being executed in the computer such as the computer program written in a piece of paper is capable of being executed”. In response, the Applicant respectfully notes that no *prima facie* case of indefiniteness has been established, and therefore, the Applicant respectfully traverses these rejections.

To make out a *prima facie* case of indefiniteness, three elements must be shown: interpretation of the claim in light of the specification; interpretation of the claim as one of ordinary skill in the art would interpret it; and that the limitations in the claim, or the subject matter not in the claim, does not reasonably define the invention. It is noted that “[in] relation to Section 112, second paragraph, the Examiner has the burden of showing that the proposed claim language is indefinite to one of skill in the art.” *See Patent Prosecution: Practice and Procedure Before the U.S. Patent Office* by Irah H. Donner, pg. 831, 2002. This type of showing has not been made.

With respect to claim 37, it is clear that a “computer readable medium” with computer-executable instructions stored thereon for performing a method is being claimed. The specific language used in the claim is as follows:

“A computer readable medium having computer-executable instructions stored thereon for performing a method, the method comprising”

With respect to claims 32 and 34, it is clear that the computer program is capable of being executed from the computer-readable medium, and that the computer-readable medium

comprises a storage device comprising a memory. This is not the same as a piece of paper. The specific language of the claims is as follows:

“... a computer-readable medium comprising a storage device comprising a memory; and a computer program capable of being executed from the computer-readable medium by the processor ...”

Thus, one of skill in the art would have no difficulty in determining the claimed subject matter, as well as its limitations. Therefore, since no *prima facie* case of indefiniteness has been established, reconsideration and withdrawal of the rejection of claims 32, 24, and 37 under 35 USC § 112, second paragraph, is respectfully requested.

§103 Rejection of the Claims

Claims 22, 24, 26, 28, 32, 34 and 37 were rejected under 35 USC § 103(a) as being unpatentable over Shinohara (U.S. 5,880,735; hereinafter “Shinohara-735”) in view of Shinohara (U.S. 5,877,769; hereinafter “Shinohara-769”), Foley and Van Dam (“Fundamentals of Interactive Computer Graphics,” Addison Wesley, pp. 722-729 (1983); hereinafter “Foley”), and Wells et al. (U.S. 5,253,339; hereinafter “Wells”). Claim 20 was rejected under 35 USC § 103(a) as being unpatentable over Obata (U.S. 5,222,203; hereinafter “Obata”) in view of Shinohara-735, Shinohara-769, Foley, Demesa III et al. (U.S. 5,684,935; hereinafter “Demesa”) and Wells. First, the Applicant does not admit that Shinohara-735, Shinohara-769, Foley, Wells, Obata, or Demesa are prior art, and reserves the right to swear behind these references in the future. Second, since a *prima facia* case of obviousness has not been established in each case, the Applicant respectfully traverses these rejections.

The Examiner has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d (BNA) 1596, 1598 (Fed. Cir. 1988). The M.P.E.P. contains explicit direction to the Examiner in accordance with the *In re Fine* court:

In order for the Examiner to establish a *prima facie* case of obviousness, three base criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim

limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *M.P.E.P.* § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d (BNA) 1438 (Fed. Cir. 1991)).

The requirement of a suggestion or motivation to combine references in a *prima facie* case of obviousness is emphasized in the Federal Circuit opinion, *In re Sang Su Lee*, 277 F.3d 1338; 61 U.S.P.Q.2D 1430 (Fed. Cir. 2002), which indicates that the motivation must be supported by evidence in the record.

No proper *prima facie* case of obviousness has been established because (1) combining the references does not teach all of the limitations set forth in the claims, (2) there is no motivation to combine the references, and (3) combining the references provides no reasonable expectation of success. Each of these points will be explained in detail, as follows.

The Combination of References Does not Teach All Limitations: Shinohara-735 teaches changing the transparency of polygons based upon the Z component of the unit normal vector **at each vertex**. See Shinohara-735, Col. 11, lines 37-43 (emphasis added). “The normal vector of each vertex is found by taking the average of each normal vector of the polygons adjoining the vertex.” Shinohara-735, Col. 2, lines 2-4. The transparency of each pixel on a particular polygonal surface is then adjusted to reflect the transparency of the vertices which enclose the surface. See Shinohara-735, Col. 10, lines 33-49.

Thus, Shinohara-735 explicitly states that transparency changes are made using vertex normal vectors, and not the incident angle created by the intersection of a viewing surface normal vector with a planar surface, as claimed by the Applicant. While the Office attempts to equate the vertex angles in Shinohara-735 to the incident angle claimed by the Applicant and created by a viewing surface normal vector, these elements are simply not the same. This conclusion was affirmed as a result of the Pre-Appeal Request for Review submitted to the Office prior to the mailing of the instant Office Action. Thus Shinohara-735 has a fundamental deficiency: it does not “create an angle of incidence at the planar surface of the polygon” as asserted in the Office Action. Rather, as noted by Shinohara-735, “Nz: Z component of the unit normal vector **of the vertex**”. Shinohara-735, Col. 7, line 48 (emphasis added). This is reinforced by Shinohara’s title for this section for the patent: Conversion of **the vertex transparency** at the converter”. Shinohara-735, Col. 7, lines 35-36 (emphasis added). Further,

as noted in the Pre-Appeal Request for Review, the angle suggested for use by the Office, and created with respect to a vertex, is ambiguous. It is simply not usable as the “angle of incidence” claimed by the Applicant.

Thus, Shinohara-735 explicitly states that transparency changes are made using vertex normal vectors, and not the incident angle created by the intersection of a viewing surface normal vector with a planar surface normal vector, as claimed by the Applicant. None of the other references (Shinohara-769, Foley, Wells, Obata, or Demesa) serve to remedy this deficiency, and therefore, no combination of these references can provide what is claimed by the Applicant, namely, modulating “the transparency of an image of the object as a function of the angle of incidence” or “calculating the transparency factor from the angle of incidence ...”.

No Motivation to Combine the References: Any transparency factor disclosed by Shinohara would have to be fixed according to a vector that is normal to a vertex, and not to a vector normal to a planar surface, as claimed by the Applicant. The resulting transparency factor provided by Shinohara would be totally unpredictable, since the incidence angle between a vertex and a vector normal to the viewing surface is ambiguous. Using the combination suggested by the Office, even further ambiguity would be expected, due to the interaction between, for example, Obata’s material characteristics, light intensity, and the illumination angle of incidence:

“The diffused transmitted light component may be calculated based upon a coefficient which is a function of the characteristics of the material forming the translucent object, the intensity of incident light from the light source and the angle of incidence of the incident light for illuminating the translucent object. The characteristics of the material include its transmissivity and its transparency.” Obata col. 2, lines 25-33.

One of ordinary skill in the art would therefore not be motivated to combine Shinohara and Obata, as the resulting transparency factor would be undefined. This conclusion was affirmed as a result of the Pre-Appeal Request for Review submitted by the Applicant prior to the preparation of the instant Office Action. This same ambiguity attaches to any combination of Shinohara-735 and the other suggested references: Shinohara-769, Foley, Wells, and Demesa.

It is respectfully noted that the test for obviousness under § 103 must take into consideration the invention as a whole; that is, one must consider the particular problem solved by the combination of elements that define the invention. *See Interconnect Planning Corp. v.*

Feil, 774 F.2d 1132, 1143, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985) (emphasis added).

References must be considered in their entirety, including parts that teach away from the claims.

See MPEP § 2141.02.

Finally, as admitted by the Office, Obata “does not explicitly disclose that the viewpoint vector to be exactly the same as the light source vector”. The Office goes on to assert that it would have been obvious “to locate the viewpoint to the same position as the light source as the viewpoint position can be moved to the light source position.” However, nothing in Obata teaches or suggests *substituting* the viewpoint for the light source, which is what is urged by the Office. This use of unsupported assertions in the Office Action does not satisfy the explicit requirements needed to demonstrate motivation as set forth by the *In re Sang Su Lee* court. Therefore, the Examiner appears to be using personal knowledge, and is again respectfully requested to submit an affidavit as required by 37 C.F.R. § 1.104(d)(2). If it is not possible to supply such an affidavit, then it is respectfully requested that the rejection of claim 20 under 35 U.S.C. § 103 be reconsidered and withdrawn

No Reasonable Expectation of Success: As the Office Action acknowledges, Obata does not teach “assigning a transparency factor to alpha,” as claimed by the Applicant. This is because the color mixing taught therein is a function of several factors, as noted above, and therefore does not provide a transparency factor that depends on the angle of incidence claimed by the Applicant.

For example, how would Shinohara, which provides an ambiguous angle of incidence, be combined with Obata, which uses material characteristics, light intensity, and incidence angle to determine a diffused transmitted light component? This is unknown, and nothing in the references serves to guide one of ordinary skill in the art with respect to a predictable outcome, that is, to a reasonable expectation of success. The same ambiguity arises when Shinohara-735 is combined with any of the other suggested references: Shinohara-769, Foley, Wells, and Demesa.

In summary, the references neither teach nor suggest the element of assigning a transparency factor to alpha, or the angle of incidence, as claimed by the Applicant, and the modification suggested by the Office does not lead to a reasonable expectation of success by one of ordinary skill in the art. In fact, the references teach away from such a combination, as any

transparency factor provided would be ambiguous. Thus, the requirements of *M.P.E.P.* § 2142 have not been satisfied; and a *prima facie* case of obviousness has not been established with respect to the Applicant's claim. It is therefore respectfully requested that the rejection of claims 20, 22, 24, 26, 28, 32, 34, and 37 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

CONCLUSION

The Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone the Applicant's attorney Mark Muller 210-308-5677 to facilitate prosecution of this Application. If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

JOHN D. MILLER

By his Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938
Minneapolis, Minnesota 55402
(210) 308-5677

By /



Mark V. Muller

Reg. No. 37,509